



Address of H. M. Alexander, M. D.,

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VACCINE VIRUS.

Nearly a century has elapsed since Dr. Edward Jenner, the discoverer of Vaccine Virus, inoculated his first patient, and proved to the world the efficacy of his theory of vaccination, as the preventative of that dreaded disease, small-pox. As has always been the fate of every new theory, invention, or innovation in its infancy, Vaccine Virus met, for a time, with violent opposition, yet the learned Jenner lived to be feted in the streets of London, his path being strewn with flowers, and was finally tendered a testimonial of ten thousand pounds, by an Act of Parliament, in recognition of the great boon he gave to mankind. But important discoveries are slow to adoption, and owing to bigotry and superstition, are seldom appreciated fully in the age of the discoverer. The evolution of Vaccine Virus was, then, necessarily slow. Great difficulty was experienced in procuring Vaccine from the animal, and the use of the crust, taken from one person and applied to another, which is known as Humanized Virus, or Vaccine, was adopted. This method was continued for many years, when it was discovered that a great number of diseases, especially skin diseases, and the most vulgar ones to which the human system is heir, were being conveyed from arm to arm.

DEGENERATED HUMANIZED VIRUS.

We shall pass over the history of the period which elapsed from the beginning of the Nineteenth Century until the propagation was begun in America in 1870, for the history of this period, as we glean it from the writings of many authorities, is very conflicting. Its efficacy as a protective agent was thoroughly proven in many instances, while there were others that left some doubts as to its ability to protect against the dread disease, small-pox. Our own experience has forced us to believe that these great deficiencies in protective power were largely due to the fact that Humanized Virus was much used, which in these cases of failure had greatly degenerated.

SOURCES OF AMERICAN PROPAGATION.

Whether true cow-pox was found among the cattle frequently prior to 1866 is not certain, but in that year a case was found in Beaugency, France, and it was from this strain that Bovine Virus was imported into America, and its propagation from heifer to heifer introduced into the United States in 1870, by the late Dr. Henry A. Martin. In the decade which followed, the propagation of Vaccine Virus was begun in various sections of the country. The methods employed, however, were of the crudest nature, and much of the propagation of a dangerous character. In many instances, propagation is still carried on in unclean stables, located in filthy city alleys, where the Virus produced is of necessity subjected to dangerous contamination of the surrounding filth; the cattle are usually procured from city stock yards—generally heifers—but very frequently decrepit, old cows, that have shown some organic weakness. Only an external examination of them can be made, and naturally

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disease bearing tuberculosus, is not always avoided. As a result, the greater portion of the Virus procured in this way, instead of affording protection against small-pox, merely produces ulcers of a dangerous and most painful nature.

LOCATION OF VACCINE ESTABLISHMENTS.

It is important that an establishment for the propagation of Bovine Virus should be located in the open country, where the advantages of pure air and perfect cleanliness can be found, and where every possible sanitary condition can be had. The buildings should be erected especially for, and devoted exclusively to, the propagation of Vaccine Virus. They should be models of perfection and completeness, while the water supply should be well filtered, and absolutely under the control of the propagator. Ample room should be given, that no crowding of cattle be called for. The operating should not be done in the stables, but should be in a spacious room, well ventilated, free from filth of every description, and perfectly dry, for dampness is an avowed enemy to Vaccine Virus. The stables wherein the cattle are housed should be clean, pure, and entirely free from foul or impure air.

THE PROPER SELECTION AND PREPARATION OF THE CATTLE.

Instead of buying cheap, diseased, or decrepit cattle from city stock yards, the better plan is to rent heifers from one to two years of age, being reared by the farmers of the surrounding country for their future milkers. This enables us to use generations of the same stock, and therefore know all about them, giving the advantages of learning of the existence of any hereditary diseases that might naturally be overlooked in the most careful examination of the animal itself. When the heifers are brought to the farm, the first thing is to give them a close examination, then place them in the stables, groom carefully, and feed on bran mash, until it is determined they are ready to become subjects. They should then be led to the operating room, and fastened. The method of this fastening differs greatly, but the one which I show you on the photographs distributed, has proven in my own hands by far the most satisfactory. By a simple mechanical arrangement the animals are easily turned over, resting on the strong portions of the ribs, near the vertebral column. They rest easily on these upholstered tables, and do not struggle, while all is done in a manner which preserves them from excitement. The inner portion of the flanks, back and above the udder, are then well shaven and inoculated with Vaccine taken from a former subject. This portion of the body is selected as it is the easiest to be kept clean, and does not chafe. In some establishments the udder is selected, but experiments have conclusively proven that the udder is too warm a location, and usually results in confluence and malignancy. The abdomen, which is also sometimes selected, offers the same objection, as the animal cannot lie down to rest without lying on some of the vesicles, and developing excessive heat. After the inoculation, the heifers are taken to specially prepared stalls, where they are cared for and watched closely for an average of seven days and nights. When the vesicles are fully developed, the animals are returned to the operating room, the crusts are then removed with the handle of a scalpel, and the vesicles are thoroughly cleansed by sponging, and all foreign and impure matter removed.

PREPARING THE POINTS.

The ivory points which are to receive the lymph which is now exuding from the vesicles, should be sterilized. They should then be placed in clamps of fifty each, so that the operator is not obliged to touch the points with his fingers. The points are coated by applying with a camel's hair brush with which the operator absorbs the virus as it exudes from the vesicles. The points are coated twice, with the virus of two animals. The vesicles should not be irritated by the repeated application of the point to the surface, as is the case in most establishments, and which causes them to exude much serum, while the repeated handling of each point causes great danger in the way of septic poisoning. Besides this, when fifty points in one of these clamps are coated with one and the same brushful of Virus from one animal, and re-coated with another brushful from another animal, they will all be alike, which is not the case if the vesicle is irritated by a repeated application of hundreds of points to the tender surface. They should be carefully inspected, packed in glass, and bear the label of the propagator. Unscrupulous propagators, do not, as a rule, label their goods, but conceal their identity, which should always be a good reason for discarding them.

SELLING THE POINTS.

Rate cutting and the great clamor of the cheap druggist, or the demand of sharp competition, have caused ivory points coated with mucilage to be placed upon the market at a very low figure, thus driving the real article out for a time. These knaves, then finding that the total failure of their goods gave them much trouble, and that the druggists returned to the legitimate ones, added croton oil to their mucilage which causes a vesicle to form. The patient tells the physician that his arm is sore, and he, accepting the statement, believes the vaccine to have been all right, while the fact that it acts so quickly proves its worthlessness.

CAUSE OF FAILURES.

This brings us to the cause of failures being reported, not only where there has been actual failures, but where the physicians have failed to wait long enough before making their reports. Not only do failures certainly result from the use of impure materials, but they also occasionally result from those of good source. Some few cases are insusceptible, but not many. Secondary vaccinations fail because they have been previously vaccinated, and are still protected. Other failures, even in primary vaccinations, are sometimes due to the fact that the Virus was shipped in an over-heated car, and hence spoiled in transit. A still more frequent cause is that the Virus is exposed to excessive heat or moisture in the office or store of the druggist, or by the physician carrying it in his vest pocket. It can be guaranteed for sixty or ninety days, for Vaccine is not injured by age as frequently as is generally supposed, if kept in cool, dry apartments. In fact, we send it to China, Hindoostan and Palestine with success. Many physicians fail in consequence of their method of operating. We do not want to say that our method of vaccination is the best, but we will give what we have found to be the most successful manner of proceeding, and also why we think others have failed.

HOW TO VACCINATE.

Our plan is to scarify the part thoroughly by scraping off the scarf-skin, and scratching the surface thus abraided in two directions, roughing it, so as to get the lymph retained close to the mouths of the absorbent vessels. The portion scraped should not be too large, as too large a surface often results in great violence, or an ulcer is produced where a simple vaccination was intended. We touch one side of the ivory point in a drop of water, shaking all possible off again, then apply it by rubbing it well upon the scarified surface, depending largely for our moisture upon the amount of serum which exuded from the scarification, to dampen it, and aid us in removing the Virus from the ivory point. Often this serum, with the water we have used, is excessive, when we can readily form a paste by the use of the other side of the ivory point which was not dampened in this manner. We are certain of getting a sufficient number of Vaccine corpuscles within reach of the mouths of the absorbent vessels, and to finish the operation we gently prick or scratch the arm with the point we have just used. Many physicians use too much water, and are unable to form a paste, the little corpuscles floating off, and being very glutinous, adhere to the skin; the physician thinks he has gathered them up, and finishes by getting all he can upon the scarified surface, but does not succeed in getting much else than the serum; the absorbent vessels exhaust themselves absorbing this material, and fail to get in any of the corpuscles required. Again, we have known of paste, when not finished by pricking it in, to have dried as a varnish beyond the reach of the absorbents, which had been closed by the rubbing process.

Another cause of failure is that hosts of physicians clamor for colorless points, forcing the propagator to give them as little as possible, in order to keep away from color, and then they use one point to two patients, when it was only intended for one.

VIOLENT RESULTS.

Violent results occur from the use of lymph containing filth, the use of irritating drugs, and the use of Virus that has been removed from the animal at the wrong time, for it should be taken early. They also occur from the use of cattle that are too old, which yield a great deal more Virus, but which is unnecessarily strong and irritating. Again, the violence may result from the neglect of the physicians to cleanse the arm prior to

vaccination, or the use of an unclean lancet; that is, one used continuously, without being disinfected. The best way to disinfect a lancet is to dip it into alcohol after each application, and then touch it to a flame; but a more frequent cause of violent arms comes from the practice of dressing the arm after the operation by means of cotton and adhesive strips. There is not the least doubt but that this imprisoning, as it were, is causing the most mischievous results, and often death. We emphatically say, keep the arm loosely clothed, put no dressing upon it, unless it is a protection shield properly made, and advise the patient to use the arm as little as possible, and keep it clean. With good Vaccine and the proper care you will have very few bad cases, unless you can find a very marked syphilitic history in your patient. Our experience has proven that syphilitic families with a decided history have shown a strong tendency to violent action.

SUMMARY OF DANGERS.

To sum up the dangers we might say that they come, first, from the improper selection of cattle; second, from the filthy condition of the establishments in which they are kept; its dangerous location; the plan of procuring Virus by pressure, and by carrying it to another apartment, after having been removed, instead of putting it on the ivory points warm, and allowing it to dry quickly. Packing it in dangerous materials for the sake of cheapness, the propagator either wanting to avoid correspondence with the consumer, or else ashamed of his goods, fails to put on his label. The druggist and physician looking for goods that cost less than ten cents a vaccination, sacrificing the lives of their patrons by buying dangerous Vaccine, or that which is not Vaccine at all, because it is sold to them at a cut rate. The druggist may keep a good article too long; it can always be exchanged for fresh without extra cost—this would be simple carelessness on the part of the dealer; the physician's retaining the goods in a vest pocket, or hot office; neglect of cleanliness in operating; want of knowledge of a proper method, and an over-anxious desire to protect the arm.

WHEN IS THE PHYSICIAN SAFE?

How shall the physician know when he is safe, and how shall he obtain the best results? First, by keeping in touch with the best propagators. Ascertain for a certainty that they have the proper kind of establishments, and exercise the proper care. Let the physician buy from a druggist upon whom he can depend, being certain that he is not getting cut-rate goods; be sure that the goods bear the label and full address of the propagator, that he may be able to correspond with the producer should he have any difficulty, either from failure or excessive action. Let him await for results of Bovine Virus from five to eight days, and never report until ten full days have elapsed, and to look with suspicion upon anything that acts on the second, third, or fourth day. In this way he can avoid many of the dangers, and protect his patient, as well as help overcome the fraudulent practices of those who care not for the health of their fellow beings.

HOW TO REMEDY BY INSPECTION.

It has been suggested that the Government assume control. To assume the role of propagator would, in this country, be a greater failure than it is to-day in those countries that have tried it. We are exporting Vaccine to-day, because it is pronounced superior to theirs, and I was informed this summer at Chicago by their own people that the Government Virus was not generally used by the intelligent classes. State propagation is not practicable for the one reason, if no other, that there is not sufficient demand to enable the propagator to keep up a continuous strain of propagation, or carry sufficient stock to be able to meet the demand when it arises. I would suggest a National Board of Health, composed of one member from each State Board, they to appoint inspectors from their number, whose duty it would be to thoroughly inspect every Vaccine establishment of the country, and to allow no Vaccine to be sold without a registry number, guaranteeing to the druggist, the physician, and the layman that the article he buys, uses, or has used upon himself or his children, has received the sanction of the proper authorities. Then, and not till then, can compulsory vaccination be justly enforced.

